UNITED STATES PATENT AND TRADEMARK OFFICE

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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/654,317	NICHOLS, JAMES
	Examiner	Art Unit	
	John Manning	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed May 31, 2005, with respect to claims 1-29 have been fully considered but they are not persuasive.

The applicant argues that the claimed invention conclusively knows the bitrate whereas Lakshman predicts the bitrate. Claim 1 merely recited changing the bandwidth allocation in anticipation of a future bitrate spike. This limitation is met by Lakshman's prediction.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., claimed invention conclusively knowing the bitrate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant argues that Figure 6A of Lakshman cannot be a histogram of bitrate as a function of time because there is no time axis. Although time is not labeled on an axis, the cell per frame is a function of time because video inherently related to time (frames per second).

The applicant argues that Lakshman does not disclose a previously generated bitrate histogram for the media program to be transmitted. Figure 6A is a previously generated bitrate histogram for a media program to be transmitted (Col 9, Lines 55-61; Col 5, 12-21).

The applicant argues that Lasksman relies entirely on forecasting models rather than a histogram that track previously generated bitrate. Information illustrated by the histogram of Figure 6A is used in the forecasting models (Col 9, Liens 47-60).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 8, 12 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Lakshman et al. (US Pat No 6,269,078).

In regard to claim 1, the Lakshman et al. reference discloses a method and apparatus for allocating bandwidth based on the properties of a video source. The claimed step of "identifying a previously-generated histogram of bitrate as a function of time associated with a multimedia program to be transmitted to a multimedia node" is met by Figure 6a. "A histogram and auto-correlation of the B frames of the data is shown in FIGS. 6A and 6B. B frames are shown because they are the most frequently occurring frames in the studied sequence" (Col 9, Lines 46-50). "Having considered the active and inactive sources and their characteristics, it is possible to thus model and predict what the cell rate needs will be for an encoder based on the types of video to be

transmitted" (Col 10, Lines 13-16). The histogram of Figure 6A is inherently a function

of time because with the knowledge of the frames per second of the system (commonly

30 frames per second) the temporal characteristic can be calculated. "The average rate

for these frames is then calculated. This average rate can then be used as the demand

requested of the network. Specifically, it would be appropriate then to predict the

requirements of N frames in advance (as a moving window), and compute a demand

(placed at time t) based on the average rate for these N frames. In one example, it

might be appropriate to select a window as large as five frames" (Col 11, Lines 5-12).

Consequently, the bitrate is generated previous to transmission of the current frame.

"Alternatively, there are active sources such as sports telecasts and movies. In these

sources, the image changes frequently and the amount of change in an image can be

dramatic" (Col 7, Lines 28-31). The movie as an active source meets the limitation of a

multimedia program. The claimed step of "changing a bandwidth allocation for the

multimedia node in anticipation of a further bitrate spike indicated in the bitrate

histogram" is met by Figure 2 and Figure 6a. "The demand for the video source must

be predicted sufficiently ahead of time so that feedback from the network arrives in time

for providing the rate information to the video encoder to encode the next frame. That

is, it is important that the prediction as to a particular part of the video be done far

enough in advance so that the network processes the demand and sends back an

allocated rate with the appropriate timing to execute that rate on the video which formed

the basis for the prediction for the demand. Furthermore, the rate returned (ER) needs

to be adequate to transmit the subsequent video frame(s) (until the next feedback is

received) without significant degradation in quality or unacceptable delay" (Col 10, Lines 18-26).

In regard to claim 8, the claimed step of "receiving a request for a previously-encoded multimedia program from the first multimedia node" is inherent to the reference. The claimed step of "allocating a first amount of bandwidth to supply said multimedia program to said multimedia node" is met by Figure 2 and Figure 6a. A "desirable cell rate, to the network. The network, in the form of the switches and links which transport the video data, allocates bandwidth (cell rate) to the video sources connected to the network in accordance with one of a selected number of different methods which are referred to below" (Col 4, Lines 54-60). The claimed step of "dynamically adjusting said first amount of bandwidth based on a previously-generated template of bitrate data as a function of time indicating changes in bitrate requirements of said multimedia program, wherein said adjusting is done prior to the occurrence of said changes" is also met by Figure 2 and Figure 6a. "The demand for the video source must be predicted sufficiently ahead of time so that feedback from the network arrives in time for providing the rate information to the video encoder to encode the next frame. That is, it is important that the prediction as to a particular part of the video be done far enough in advance so that the network processes the demand and sends back an allocated rate with the appropriate timing to execute that rate on the video which formed the basis for the prediction for the demand. Furthermore, the rate returned (ER) needs to be adequate to transmit the subsequent video frame(s) (until the next feedback is received) without significant degradation in quality or unacceptable delay" (Col 10, Lines

18-26). "The average rate for these frames is then calculated. This average rate can

then be used as the demand requested of the network. Specifically, it would be

appropriate then to predict the requirements of N frames in advance (as a moving

window), and compute a demand (placed at time t) based on the average rate for these

N frames. In one example, it might be appropriate to select a window as large as five

frames" (Col 11, Lines 5-12). Consequently, the bitrate is generated previous to

transmission of the current frame.

In regard to claim 12, the claimed step of "dynamically adjusting said first amount

of bandwidth based on a template of bitrate data as a function of time indicating

changes in bitrate requirements of a multimedia program" is met by Figure 2 and Figure

6a. "The demand for the video source must be predicted sufficiently ahead of time so

that feedback from the network arrives in time for providing the rate information to the

video encoder to encode the next frame. That is, it is important that the prediction as to

a particular part of the video be done far enough in advance so that the network

processes the demand and sends back an allocated rate with the appropriate timing to

execute that rate on the video which formed the basis for the prediction for the demand.

Furthermore, the rate returned (ER) needs to be adequate to transmit the subsequent

video frame(s) (until the next feedback is received) without significant degradation in

quality or unacceptable delay" (Col 10, Lines 18-26).

In regard to claim 29, the claimed step of "receiving a request for a multimedia

program from the first multimedia node" is inherent to the reference. The claimed step

of "identifying a first bitrate histogram associated with a first multimedia program" is met

by Figure 6a. "A histogram and auto-correlation of the B frames of the data is shown in

FIGS. 6A and 6B. B frames are shown because they are the most frequently occurring

frames in the studied sequence" (Col 9, Lines 46-50). "Having considered the active

and inactive sources and their characteristics, it is possible to thus model and predict

what the cell rate needs will be for an encoder based on the types of video to be

transmitted" (Col 10, Lines 13-16). The claimed step of "allocating a particular amount

of bandwidth to supply the first multimedia program to said multimedia node" is met by

Figure 2 and Figure 6a. A "desirable cell rate, to the network. The network, in the form

of the switches and links which transport the video data, allocates bandwidth (cell rate)

to the video sources connected to the network in accordance with one of a selected

number of different methods which are referred to below" (Col 4, Lines 54-60). The

reference discloses the allocation of a first amount of bandwidth to supply multimedia

content to a multimedia node where the bandwidth allocation is adjusted dynamically.

The bandwidth allocated is maintained until another multimedia node requires

bandwidth. "In step 501 the video source predicts the bandwidth or encoding rate which

will be necessary for a near future collection of video data. Having generated such a

prediction, the source generates a bandwidth request and transmits it to the network in

step 502. The network then processes this request to determine an explicit rate at

which the video source should transmit in step 503 and sends that explicit rate back to

the video source in step 504. The encoder at the video source is then adjusted to

reflect the rate allocated to the video source by the network in step 505. The process is

then repeated" (Col 5, Lines 12-22). "The average rate for these frames is then

calculated. This average rate can then be used as the demand requested of the

network. Specifically, it would be appropriate then to predict the requirements of N

frames in advance (as a moving window), and compute a demand (placed at time t)

based on the average rate for these N frames. In one example, it might be appropriate

to select a window as large as five frames" (Col 11, Lines 5-12). Consequently, the

bitrate is generated previous to transmission of the current frame. "Alternatively, there

are active sources such as sports telecasts and movies. In these sources, the image

changes frequently and the amount of change in an image can be dramatic" (Col 7,

Lines 28-31). The movie as an active source meets the limitation of a multimedia

program.

Claims 30-31 are met by that discussed above for claims 1, 8 and 29. The

information represented by the histogram of Figure 6A is generated for determining the

necessary bandwidth.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2-7, 9-11, 13-17, 27-28 and 30-31 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Lakshman et al. in view of Ito et al (US Pat No 6,014,693).

In regard to claim 2, Lakshman discloses a bandwidth allocation system that

dynamically alters the bandwidth based on prediction using statistical data (i.e. the

histogram) of the video source. The reference fails to explicitly disclose that histograms are stored in a database. The Ito reference teaches the use of a database to store information regarding video data to facilitate the organization of the information. With respect to the Ito reference, when the user inputs a request to view multimedia, the system refers to the video data index 13, to determine the proper bit rate. The "video index information defines a plurality of settings for the transfer bit rate of video data and indicates which data included in the original video data the video server should transfer to the client when setting the transfer bit rate to one of the plurality of settings. Furthermore, the video data assembler extracts data from the original video data by referring to the video data index information so as to set the transfer bit rate to one of the plurality of settings" (Col 3, Lines 12-20). It is inherent that the server uses identification data to identify the proper "template". Consequently, it would have been obvious to one of ordinary skill in the art to implement the Lakshman reference with the use of a database to store information regarding video data to facilitate the organization of the information.

In regard to claims 3-4, the combined teaching discloses a system for delivering video data with a dynamic bandwidth allocation based on prediction using statistical data (i.e. the histogram) of the video source and buffering so as to ensure the continuity of the data received by the "multimedia node" or client. The combined teaching fails to explicitly disclose the use of serial numbers or checksums for identification of multimedia content as claimed. However, the examiner gives OFFICIAL NOTICE that it is notoriously well known in the art to use serial numbers or checksums for identification

so as to allow multimedia content to be identified. Consequently, it would have been clearly obvious to one of ordinary skill in the art to implement the combined teaching with serial numbers identification of multimedia content for so as to allow multimedia content to be identified.

In regard to claim 5, the video data index 13 is located on a server remote from the client equipment (Figures 2, 5, and 7-8).

In regard to claim 6, Lakshman discloses a bandwidth allocation system that dynamically alters the bandwidth based on prediction of future bitrate spikes using statistical data (i.e. the histogram) of the video source. The reference fails to explicitly disclose filling an input buffer by a particular amount. The Ito reference teaches the filling of an input buffer by a particular amount so as to prevent services provided by the video server from being interrupted. The Ito system comprises an input buffer at the "node" so as to account for changes in the transfer bit rate such as a "spike". "Reference numeral 117 denotes a network load sensor for detecting a load imposed on a network 103, and 121 denotes a precharge buffer, which is a component of the client 102, for absorbing changes in the transfer bit rate of video data delivered by the video server 101 so as to prevent video data transferring services provided by the video server 101 from being interrupted." (Col 9, Lines 36-43). Consequently, it would have been obvious to one of ordinary skill in the art to implement the Lakshman reference with the filling of an input buffer by a particular amount so as to prevent services provided by the video server from being interrupted.

In regard to claim 7, with regard to the Ito reference, when "the transfer bit rate is changed, in step F47, the video data assembler 14, in step F49, extracts data to be transferred at a transfer bit rate which is increased from the current transfer bit rate by one level in accordance with the video data index so as to increase the current bit rate and reassembles the extracted data to create video data. Then, the video data delivery unit 15 delivers the video data" (Col 7, Lines 5-11). And the buffer 121 absorbs the change "in the transfer bit rate of video data delivered by the video server 101 so as to prevent video data transferring services provided by the video server 101 from being interrupted." (Col 9, Lines 39-43).

In regard to claim 9 and 10, Lakshman discloses a bandwidth allocation system that dynamically alters the bandwidth based on prediction using statistical data (i.e. the histogram) of the video source. The reference fails to explicitly disclose that histograms are stored in a database. The Ito reference teaches the use of a database to store information regarding video data to facilitate the organization of the information. With respect to the Ito reference, when the user inputs a request to view multimedia, the system refers to the video data index 13, to determine the proper bit rate. The "video index information defines a plurality of settings for the transfer bit rate of video data and indicates which data included in the original video data the video server should transfer to the client when setting the transfer bit rate to one of the plurality of settings. Furthermore, the video data assembler extracts data from the original video data by referring to the video data index information so as to set the transfer bit rate to one of the plurality of settings" (Col 3, Lines 12-20). It is inherent that the server uses

identification data to identify the proper "template". Consequently, it would have been

obvious to one of ordinary skill in the art to implement the Lakshman reference with the

use of a database to store information regarding video data to facilitate the organization

of the information. It is inherent that the server uses identification data to identify the

proper "template".

In regard to claims 11, the combined teaching discloses a system for delivering

video data with a dynamic bandwidth allocation based on prediction using statistical

data (i.e. the histogram) of the video source and buffering so as to ensure the continuity

of the data received by the "multimedia node" or client. The combined teaching fails to

explicitly disclose the use of serial numbers or checksums for identification of

multimedia content as claimed. However, the examiner gives OFFICIAL NOTICE that it

is notoriously well known in the art to use serial numbers or checksums for identification

so as to allow multimedia content to be identified. Consequently, it would have been

clearly obvious to one of ordinary skill in the art to implement the combined teaching

with serial numbers identification of multimedia content for so as to allow multimedia

content to be identified.

In regard to claim 13 the combined teaching discloses a system for delivering

video data with a dynamic bandwidth allocation based on prediction using statistical

data (i.e. the histogram) of the video source and buffering so as to ensure the continuity

of the data received by the "multimedia node" or client. The combined teaching fails to

explicitly disclose the use of a digital video disk as the multimedia content as claimed.

However, the examiner gives OFFICIAL NOTICE that it is notoriously well known in the

art to use digital video disk as the multimedia content so as to provide a storage medium for the multimedia data. Consequently, it would have been clearly obvious to one of ordinary skill in the art to implement the combined teaching with the use of a digital video disk as the multimedia content so as to provide a storage medium for the multimedia data.

In regard to claim 14, Lakshman discloses a bandwidth allocation system that dynamically alters the bandwidth based on prediction of future bitrate spikes using statistical data (i.e. the histogram) of the video source. The reference fails to explicitly disclose filling an input buffer by a particular amount. The Ito reference teaches the filling of an input buffer by a particular amount so as to prevent services provided by the video server from being interrupted. The Ito system comprises an input buffer at the "node" so as to account for changes in the transfer bit rate such as a "spike". "Reference numeral 117 denotes a network load sensor for detecting a load imposed on a network 103, and 121 denotes a precharge buffer, which is a component of the client 102, for absorbing changes in the transfer bit rate of video data delivered by the video server 101 so as to prevent video data transferring services provided by the video server 101 from being interrupted." (Col 9, Lines 36-43). Consequently, it would have been obvious to one of ordinary skill in the art to implement the Lakshman reference with the filling of an input buffer by a particular amount so as to prevent services provided by the video server from being interrupted.

In regard to claim 15, Lakshman discloses a bandwidth allocation system that dynamically alters the bandwidth based on prediction of future bitrate spikes using

statistical data (i.e. the histogram) of the video source. The reference fails to explicitly

disclose filling an input buffer by a particular amount in anticipation of an increase in

bitrate requirements for multimedia content to a second node. The Ito reference teaches

the filling an input buffer by a particular amount in anticipation of an increase in bitrate

requirements for multimedia content to a second node so as to prevent services

provided by the video server from being interrupted. The Ito system comprises an input

buffer at the "node" so as to account for changes in the transfer bit rate such as a

"spike". "In FIG. 5, the client 2 outputs a request for transfer of video data to the video

server 1. When the video server receives the transfer request from the client, the video

server delivers a constant amount of data within a certain time in accordance with the

transfer bit rate of video data so as to transfer the video data requested by the client

through the video data delivering unit 15, in steps F61 and F62. The video server, in

step F63, starts to measure a load L_n imposed on the network at constant intervals T_1

by means of the network load sensor 17 just after transfers of video data are started.

Then, the video server compares a measured value L_n of the network load to a

reference value L_1, which is the maximum of the network load that cannot be exceeded

in order to maintain the current transfer bit rate" (Col 7, Lines 44-57). The bit rate is

adjusted in response to the load on the network. Therefor, the bit rate is adjusted when

another client or node request video data. Also, there is an input buffer at the "node" so

as to account for changes in the transfer bit rate such as a "spike". "Reference numeral

117 denotes a network load sensor for detecting a load imposed on a network 103, and

121 denotes a precharge buffer, which is a component of the client 102, for absorbing

changes in the transfer bit rate of video data delivered by the video server 101 so as to

prevent video data transferring services provided by the video server 101 from being

interrupted." (Col 9, Lines 36-43). Consequently, it would have been obvious to one of

ordinary skill in the art to implement the Lakshman reference with the filling an input

buffer by a particular amount in anticipation of an increase in bitrate requirements for

multimedia content to a second node so as to prevent services provided by the video

server from being interrupted.

In regard to claim 16, Lakshman discloses a bandwidth allocation system that

dynamically alters the bandwidth based on prediction of future bitrate spikes using

statistical data (i.e. the histogram) of the video source. The reference fails to explicitly

disclose filling an input buffer by a particular amount. The Ito reference teaches the

filling of an input buffer by a particular amount so as to prevent services provided by the

video server from being interrupted. The Ito system comprises an input buffer at the

"node" so as to account for changes in the transfer bit rate such as a "spike".

"Reference numeral 117 denotes a network load sensor for detecting a load imposed on

a network 103, and 121 denotes a precharge buffer, which is a component of the client

102, for absorbing changes in the transfer bit rate of video data delivered by the video

server 101 so as to prevent video data transferring services provided by the video

server 101 from being interrupted." (Col 9, Lines 36-43).

In regard to claim 17, the Ito reference discloses the filling an input buffer by a

particular amount in anticipation of an increase in bitrate requirements for multimedia

content to a second node so as to prevent services provided by the video server from

being interrupted. The Ito system comprises an input buffer at the "node" so as to

account for changes in the transfer bit rate such as a "spike". "In FIG. 5, the client 2

outputs a request for transfer of video data to the video server 1. When the video

server receives the transfer request from the client, the video server delivers a constant

amount of data within a certain time in accordance with the transfer bit rate of video

data so as to transfer the video data requested by the client through the video data

delivering unit 15, in steps F61 and F62. The video server, in step F63, starts to

measure a load L_n imposed on the network at constant intervals T_1 by means of the

network load sensor 17 just after transfers of video data are started. Then, the video

server compares a measured value L_n of the network load to a reference value L_1,

which is the maximum of the network load that cannot be exceeded in order to maintain

the current transfer bit rate" (Col 7, Lines 44-57). The bit rate is adjusted in response to

the load on the network. Therefor, the bit rate is adjusted when another client or node

request video data. Also, there is an input buffer at the "node" so as to account for

changes in the transfer bit rate such as a "spike". "Reference numeral 117 denotes a

network load sensor for detecting a load imposed on a network 103, and 121 denotes a

precharge buffer, which is a component of the client 102, for absorbing changes in the

transfer bit rate of video data delivered by the video server 101 so as to prevent video

data transferring services provided by the video server 101 from being interrupted." (Col

9, Lines 36-43).

In regard to claim 27, Lakshman discloses a bandwidth allocation system that

dynamically alters the bandwidth based on prediction using statistical data (i.e. the

histogram) of the video source. The claimed step of "identifying a bitrate histogram

associated with multimedia content to be transmitted to a multimedia node" is met by

Figure 6a. "A histogram and auto-correlation of the B frames of the data is shown in

FIGS. 6A and 6B. B frames are shown because they are the most frequently occurring

frames in the studied sequence" (Col 9, Lines 46-50). "Having considered the active

and inactive sources and their characteristics, it is possible to thus model and predict

what the cell rate needs will be for an encoder based on the types of video to be

transmitted" (Col 10, Lines 13-16). The reference fails to explicitly disclose delaying a

start time in anticipation of a future bitrate spike. The Ito reference teaches the filling of

an input buffer by a particular amount or delaying a start time in anticipation of a future

bitrate spike so as to prevent services provided by the video server from being

interrupted. The Ito system comprises an input buffer at the "node" so as to account for

changes in the transfer bit rate such as a "spike". "Reference numeral 117 denotes a

network load sensor for detecting a load imposed on a network 103, and 121 denotes a

precharge buffer, which is a component of the client 102, for absorbing changes in the

transfer bit rate of video data delivered by the video server 101 so as to prevent video

data transferring services provided by the video server 101 from being interrupted." (Col

9, Lines 36-43). Consequently, it would have been obvious to one of ordinary skill in the

art to implement the Lakshman reference with delaying a start time in anticipation of a

future bitrate spike so as to prevent services provided by the video server from being

interrupted.

In regard to claim 28, the Ito reference discloses the filling of an input buffer by a

particular amount so as to prevent services provided by the video server from being

interrupted. The Ito system comprises an input buffer at the "node" so as to account for

changes in the transfer bit rate such as a "spike". "Reference numeral 117 denotes a

network load sensor for detecting a load imposed on a network 103, and 121 denotes a

precharge buffer, which is a component of the client 102, for absorbing changes in the

transfer bit rate of video data delivered by the video server 101 so as to prevent video

data transferring services provided by the video server 101 from being interrupted." (Col

9, Lines 36-43).

6.   Claims 18, 21-22, and 26 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lakshman et al. in view of Humpleman (US Pat No 6,188,397).

In regard to claim 18, the Lakshman reference discloses the allocation of a first

amount of bandwidth to supply multimedia content to a multimedia node where the

bandwidth allocation is adjusted dynamically. A "desirable cell rate, to the network. The

network, in the form of the switches and links which transport the video data, allocates

bandwidth (cell rate) to the video sources connected to the network in accordance with

one of a selected number of different methods which are referred to below" (Col 4, Lines

54-60). The claimed limitation that "the first amount of bandwidth is adjusted prior to the

occurrence of said changes" is met by Figure 2 and Figure 6a. "The demand for the

video source must be predicted sufficiently ahead of time so that feedback from the

network arrives in time for providing the rate information to the video encoder to encode

the next frame. That is, it is important that the prediction as to a particular part of the

video be done far enough in advance so that the network processes the demand and

sends back an allocated rate with the appropriate timing to execute that rate on the

video which formed the basis for the prediction for the demand. Furthermore, the rate

returned (ER) needs to be adequate to transmit the subsequent video frame(s) (until the

next feedback is received) without significant degradation in quality or unacceptable

delay" (Col 10, Lines 18-26). "The average rate for these frames is then calculated.

This average rate can then be used as the demand requested of the network.

Specifically, it would be appropriate then to predict the requirements of N frames in

advance (as a moving window), and compute a demand (placed at time t) based on the

average rate for these N frames. In one example, it might be appropriate to select a

window as large as five frames" (Col 11, Lines 5-12). Consequently, the bitrate is

generated previous to transmission of the current frame. "Alternatively, there are active

sources such as sports telecasts and movies. In these sources, the image changes

frequently and the amount of change in an image can be dramatic" (Col 7, Lines 28-31).

The movie as an active source meets the limitation of a multimedia program. The

reference fails to explicitly disclose the use of this system in a home network. The

Humpleman et al. reference teaches the use of a home network for connecting different

types of household appliances so as to provide convenient means of control with client-

server architecture (Col 2, Lines 33-67; Col 3, Lines 1-25). Accordingly, it would have

been obvious to one of ordinary skill in the art at the time of the invention to modify the

Humpleman et al. reference to incorporate the system in a home network.

In regard to claim 21, the claimed limitation of dynamically adjusting "said first

amount of bandwidth based on a histogram of bitrate data indicating changes in bitrate

requirements of said multimedia content requested by a second multimedia node" is

met by Figure 2 and Figure 6a. "The demand for the video source must be predicted

sufficiently ahead of time so that feedback from the network arrives in time for providing

the rate information to the video encoder to encode the next frame. That is, it is

important that the prediction as to a particular part of the video be done far enough in

advance so that the network processes the demand and sends back an allocated rate

with the appropriate timing to execute that rate on the video which formed the basis for

the prediction for the demand. Furthermore, the rate returned (ER) needs to be

adequate to transmit the subsequent video frame(s) (until the next feedback is received)

without significant degradation in quality or unacceptable delay" (Col 10, Lines 18-26).

In regard to claim 22, the combined teaching discloses a system for delivering

video data with a dynamic bandwidth allocation based on prediction using statistical

data (i.e. the histogram) of the video source and buffering so as to ensure the continuity

of the data received by the "multimedia node" or client. The combined teaching fails to

explicitly disclose the use of a digital video disk as the multimedia content as claimed.

However, the examiner gives OFFICIAL NOTICE that it is notoriously well known in the

art to use digital video disk as the multimedia content so as to provide a storage

medium for the multimedia data. Consequently, it would have been clearly obvious to

one of ordinary skill in the art to implement the combined teaching with the use of a

digital video disk as the multimedia content so as to provide a storage medium for the

multimedia data.

In regard to claim 26, the Lakshman reference discloses the allocation of a first

amount of bandwidth to supply multimedia content to a multimedia node where the

bandwidth allocation is adjusted dynamically. The bandwidth allocated is maintained

until another multimedia node requires bandwidth. "In step 501 the video source

predicts the bandwidth or encoding rate which will be necessary for a near future

collection of video data. Having generated such a prediction, the source generates a

bandwidth request and transmits it to the network in step 502. The network then

processes this request to determine an explicit rate at which the video source should

transmit in step 503 and sends that explicit rate back to the video source in step 504.

The encoder at the video source is then adjusted to reflect the rate allocated to the

video source by the network in step 505. The process is then repeated" (Col 5, Lines

12-22).

7.   Claims 19-20 and 23-25 rejected under 35 U.S.C. 103(a) as being unpatentable

over Lakshman et al. in view of Humpleman and further in view of Ito et al.

In regard to claim 19, the combined teaching a bandwidth allocation system that

dynamically alters the bandwidth based on prediction using statistical data (i.e. the

histogram) of the video source in a home media server. The reference fails to explicitly

disclose that histograms are stored in a database. The Ito reference teaches the use of

a database to store information regarding video data to facilitate the organization of the

information. With respect to the Ito reference, when the user inputs a request to view

multimedia, the system refers to the video data index 13, to determine the proper bit

rate. The "video index information defines a plurality of settings for the transfer bit rate

of video data and indicates which data included in the original video data the video

server should transfer to the client when setting the transfer bit rate to one of the

plurality of settings. Furthermore, the video data assembler extracts data from the

original video data by referring to the video data index information so as to set the

transfer bit rate to one of the plurality of settings" (Col 3, Lines 12-20). It is inherent that

the server uses identification data to identify the proper "template". Consequently, it

would have been obvious to one of ordinary skill in the art to implement the Lakshman

reference with the use of a database to store information regarding video data to

facilitate the organization of the information.

In regard to claims 20, the combined teaching discloses a system for delivering

video data with a dynamic bandwidth allocation based on prediction using statistical

data (i.e. the histogram) of the video source and buffering so as to ensure the continuity

of the data received by the "multimedia node" or client. The combined teaching fails to

explicitly disclose the use of serial numbers or checksums for identification of

multimedia content as claimed. However, the examiner gives OFFICIAL NOTICE that it

is notoriously well known in the art to use serial numbers or checksums for identification

so as to allow multimedia content to be identified. Consequently, it would have been

clearly obvious to one of ordinary skill in the art to implement the combined teaching

with serial numbers identification of multimedia content for so as to allow multimedia

content to be identified.

In regard to claim 23 and 25, the combined teaching discloses a bandwidth allocation system that dynamically alters the bandwidth based on prediction of future bitrate spikes using statistical data (i.e. the histogram) of the video source in a home media server. The combined teaching fails to explicitly disclose filling an input buffer by a particular amount. The Ito reference teaches the filling of an input buffer by a particular amount so as to prevent services provided by the video server from being interrupted. The Ito system comprises an input buffer at the "node" so as to account for changes in the transfer bit rate such as a "spike". "Reference numeral 117 denotes a network load sensor for detecting a load imposed on a network 103, and 121 denotes a precharge buffer, which is a component of the client 102, for absorbing changes in the transfer bit rate of video data delivered by the video server 101 so as to prevent video data transferring services provided by the video server 101 from being interrupted." (Col 9, Lines 36-43). Consequently, it would have been obvious to one of ordinary skill in the art to implement the combined teaching with the filling of an input buffer by a particular amount so as to prevent services provided by the video server from being interrupted.

In regard to claim 24, the combined teaching discloses a bandwidth allocation system that dynamically alters the bandwidth based on prediction of future bitrate spikes using statistical data (i.e. the histogram) of the video source in a home media server. The combined teaching fails to explicitly disclose filling an input buffer by a particular amount in anticipation of an increase in bitrate requirements for multimedia content to a second node. The Ito reference teaches the filling an input buffer by a particular amount in anticipation of an increase in bitrate requirements for multimedia content to a second

node so as to prevent services provided by the video server from being interrupted.

The Ito system comprises an input buffer at the "node" so as to account for changes in

the transfer bit rate such as a "spike". "In FIG. 5, the client 2 outputs a request for

transfer of video data to the video server 1. When the video server receives the transfer

request from the client, the video server delivers a constant amount of data within a

certain time in accordance with the transfer bit rate of video data so as to transfer the

video data requested by the client through the video data delivering unit 15, in steps

F61 and F62. The video server, in step F63, starts to measure a load L_n imposed on

the network at constant intervals T_1 by means of the network load sensor 17 just after

transfers of video data are started. Then, the video server compares a measured value

L_n of the network load to a reference value L_1, which is the maximum of the network

load that cannot be exceeded in order to maintain the current transfer bit rate" (Col 7,

Lines 44-57). The bit rate is adjusted in response to the load on the network. Therefor,

the bit rate is adjusted when another client or node request video data. Also, there is an

input buffer at the "node" so as to account for changes in the transfer bit rate such as a

"spike". "Reference numeral 117 denotes a network load sensor for detecting a load

imposed on a network 103, and 121 denotes a precharge buffer, which is a component

of the client 102, for absorbing changes in the transfer bit rate of video data delivered by

the video server 101 so as to prevent video data transferring services provided by the

video server 101 from being interrupted." (Col 9, Lines 36-43). Consequently, it would

have been obvious to one of ordinary skill in the art to implement the combined teaching

with the filling an input buffer by a particular amount in anticipation of an increase in

bitrate requirements for multimedia content to a second node so as to prevent services

provided by the video server from being interrupted.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to John Manning whose telephone number is 571-272-

7352. The examiner can normally be reached on M-F: 9:00 - 5:30.

9.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John W. Miller can be reached on 571-272-7353. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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